

Please amend claim 4 as follows:

4. (Amended) The apparatus of claim 1, wherein the central processing unit analyzes

92 time averaged states of polarization via the relationship,  $DOP = |\vec{r}_k| = \frac{1 - |\vec{a}|^2}{|\vec{r}_k - (\vec{a} \cdot \hat{r}_k)\vec{a}|}$ , to determine the principle states of polarization by calculating the vector  $\vec{a}$ .

Please amend claim 6 as follows:

93 6. (Amended) The apparatus of claim 1, wherein the central processing unit is further programmed to determine the relative order, in time, of the principle states of polarization.

Please amend claim 20 as follows:

94 20. (Amended) An optical compensating apparatus for reducing PMD in an optical signal transmitted through an optical medium, the apparatus comprising:

a polarization module configured to receive an optical signal propagating through the optical medium, determine the principal states of polarization of the optical medium, determine a magnitude of time delay between the principle states of polarization, and generate a signal for transforming the polarization of the optical signal; and

an optical transformer arranged in an optical path of the medium after the polarization module and configured to transform the optical signal and reduce a time delay between the principle states of polarization based on the signal received from the polarization module.

Please amend claim 24 as follows:

24. (Amended) A method of reducing PMD of an optical signal propagating in an optical medium, the method comprising:

95 determining the principal state of polarizations of the optical medium with a polarization controller,

determine a magnitude of time delay between a first principle states of polarization and a second principal state of polarization with the polarization controller, and

transforming the polarization of the optical signal with a polarization transforming device based on the polarization of the principal states of polarization.

Applicant : Patrick C. Chou  
Serial No. : 09/785,039  
Filed : February 15, 2001  
Page : 3

Attorney's Docket 01997-296001 / MIT 8471 CIP

Please amend claim 26 as follows:

06 26. (Amended) The method of claim 24 further comprising delaying the first principal state of polarization with respect to a second principal state of polarization.

09785039.042701